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THE JOURNAL OF PHILOSOPHY

DETERMINISM, FATALISM, AND HISTORICAL MATERIALISM

I

TIME and the Laws of Nature. It has been frequently remarked that the laws of science are not merely descriptive of the past, but that in a certain sense they are prophetic of the future. And in this connection it is customary to distinguish between the kind of knowledge we have of past events (i.e., facts) and the kind of knowledge we have of future events (i.e., laws).[1] A statement of fact is an instance of a law. But the law has a generality which is believed to embrace the future, and hence involves prediction, whereas a statement of fact is restricted to a specific time in the past.

Such account of scientific statements fails to distinguish between two types of temporal reference in science. It will be seen that with respect to one type, a reference to future time is not essential either to statements of law or of fact; while with respect to the other type, both statements of fact and law refer to the future. We shall call the first type of temporal reference *systemic*, the second *methodological*. The systemic temporal reference of a statement is entirely determined by the values of the constants or variables designating time in the statement. The methodological reference to time is determined by a consideration of the methods whereby the truth-value and existential meaning (as distinguished from formal meaning) of the statement is established.

Statements in which all terms are either constants or variables with finite number of values, are what we usually call statements of fact. Statements in which at least one term is a variable with unrestricted number of values are statements of law. The generality of a law evidently does not require that this variable should designate time.[2] In other words, statements of science do not necessarily have a systemic reference to the future.

When, however, we consider the methodological question of the

[1] *Cf.* R. N. Cambell, *What is Science*, London, p. 58. *Physics, the Elements*, Cambridge, 1920, p. 101.

[2] Laws in which all time-symbols are constants or restricted to finite number of values are rarely formulated in science, because they are not considered important.

truth of a scientific statement or of its applicability to a specific concrete situation we are dealing not merely with the formal relations of sentences or symbols, but with techniques or processes of verification or application. In reference to such questions, the scientific statement acquires an extra-systemic character. It is not merely an element of the deductive system of science, but it is also a proposal for a course of action designed to realize a specified end. In so far as a statement (either of fact or of law) is verifiable it can be stated in the form of such proposal.[3] The truth of the assertion is then identical with the adequacy of the "proposal" implicit in it. The outcome of the proposed course of action and hence the adequacy or "truth" of the proposition is the end-term of a process. With respect to the proposal it is always in the future. Every statement of science—even those whose systemic temporal reference is entirely to the past—have, therefore, a methodological reference to the future.

In their systemic aspects scientific statements constitute a formal deductive system. Their existential reference is determined by the operational techniques coördinated with the system. We may then say that reference to the future is a methodological character of science, and it is in this sense that prediction is implicit in all scientific statements and lends these statements their distinctively scientific character. It is as a guide to future action, as an anticipation of the outcome of planned activity that science is distinguished from formal symbolic structures.

This methodological reference to the future implies that scientific laws find their function and validity in action. They deal with the issues of change, and those abstractions of scientific thought which appear in some philosophies as universal essences are only observable similarities in experience. Science can be said to deal with universals only if we mean by the latter the recurrent traits in changing situations. No universal or idea is "embodied" in nature. Universals are terms of discourse expressing ways of thinking about change. Science does not discover its categories in nature; it invents them for the solution of its problems. These categories are ideas—human ideas, not absolute or subsistent essences—used to guide action and to anticipate future events. Thus history is neither—as Hegel thought—the unfolding of an idea, nor, as mechanistic philosophies suppose, the product of a system of forces, but a way of thinking about and controlling social changes in our efforts to solve social problems.

To say that the categories and objects of science are inventions

[3] This is not true of analytic sentences. Or, more accurately, in the case of analytic sentences the "proposal" has no specific meaning.

does not mean that nature and history are creatures of fancy. For the concepts of science arise in reflection on observable things and find successful application in our operations on material conditions. While systems of physical laws may assume various forms, not all conceivable systems are applicable in the measurement and control of events. There is an intractable side to nature which makes error as well as truth, failure as well as success, possible.

II

Time and Necessity. This discrepancy between the limited possibilities of nature and the rich exuberance of imagination is the remote historic origin of those philosophies which regard nature and history as the manifestation of a rigid structure in which some principle of necessity or original cause is endowed with generative power. Later, this doctrine finds a more sophisticated but none the less spurious foundation in the increasing scope and precision of science. In opposition to such doctrines the present discussion aims, in part, to show that the concept of necessity has an exclusively systemic rôle in science (i.e., it is a formal relation between the statements of science) and can not without contradiction be applied to temporal succession.

Necessity as a principle of explanation is characteristic of monistic philosophies of history, such as (1) absolute fatalism, which underlies the Augustinian doctrine of grace, the Calvanistic doctrine of predestination, and the Mohammedan Kismet; and (2) absolute determinism, exemplified in philosophies of absolute idealism.

In these philosophies the concept of necessity is a correlative of the concept of individual or substantial being. A necessary being is attributive, adjectival, and dependent, with respect to another being regarded as substantial, individual, and independent. To say that a thing or an event is necessary is then to deny its individuality, to see it as implicated in a substance or individual.

In a universe constituted by a plurality of substances two kinds of being could be distinguished; necessary and contingent. Necessity is a modality of being; contingency a modality of becoming. A thing is necessary when it is completely determined by one substance, that is, when its being follows from the nature of substance. A thing is contingent when its being does not follow from the nature of substance, in other words, when it is, but is not necessary. But if its being is not determined by any one substance, it must be the result of interaction between substances or it must itself be a substance. A contingent and non-substantial thing therefore presup-

poses interaction between substances. In that case neither the interaction nor the nature of the result of interaction could be inferred from either substance alone. With respect to any substance, therefore, the contingent thing is an unpredictable, novel outcome of activity.[4] The contingent is always a novelty, and conversely no novelty can be necessary. For what is necessary can not become, it simply is. To say that a thing is necessary but it does not yet exist, is to say that the substance with reference to which it is necessary does not exist. The existence of substance implies, therefore, the simultaneous existence of all its necessary consequences.

III

Absolute Determinism and Absolute Fatalism. The non-temporal character of necessity is an old and insurmountable difficulty of monistic philosophies. In the history of medieval philosophy the various attempts to reconcile the notions of time and necessity have marked the evolution of the earlier doctrines of absolute fatalism or predestination into the later philosophies of determinism. It is interesting to note a few phases of this evolution.

The direct dependence of everything on a unique cause underlies the Augustinian doctrine of perpetual creation, that is, the doctrine that the preservation of the world is identical with its creation. Creation in this theology is a unique, timeless act, while preservation implies existence in time. Their identity, therefore, involves a contradiction. Five hundred years after Augustine, Scotus Erigina reasserts the Augustinian theory of perpetual creation, but he attempts to reconcile this theory with time or succession. This involves great difficulties, for existences in time can not—in terms of his metaphysics—be regarded as realities with determinate individuality. Their nature is accidental and is determined only by the immanence of God in them. Erigina, therefore, is bound to deny the existence of time. The acts of God, he says, are simultaneous, but man can observe them only in succession. Time is thus made an illusion arising from human imperfection. Abelard, two hundred years after Erigina, is already too much disturbed by this mystical immanence of God in all events to adhere to the views of Augustine or to Erigina's compromise. He drives a pluralistic wedge into Augustinian monism by asserting the essential—as opposed to the accidental—nature of temporal existences which he

[4] It is significant that in Hegel's system actuality is never contingent. Contingency is only "the aspect under which actuality first comes before consciousness, and which is often mistaken for actuality itself." *Encyclopædia of the Philosophical Sciences, The Doctrine of Essence,* § 145. Developed actuality is always necessity. *Ibid.* § 147.

views as essentially individual. Thereby it becomes possible for him to recognize an order of things which arises from the nature of things themselves, and not immanently from God. He says that the will of God was present only in the original act of creation and thereafter was replaced by nature or the "laws which rule and preserve creation." From this to the determinism of Spinoza [5] was but a short step.

As long as determinism remains monistic, however, it can not free itself of these difficulties. Necessity in absolute determinism is regarded as a modality of becoming (i.e., necessity of events) and hence as giving rise to novelty without contingency. As a modality of being, necessity consists in the differentiation of a simple substance into a manifold (the differentiated part then *is* necessary with respect to the undifferentiated whole); as a modality of becoming, it consists in the differentiation of totality into successive phases (the differentiated phase thus *becomes* necessary with respect to the undifferentiated totality).[6] Substance, now identified with absolute totality, thereby acquires a temporal character. Thus if $E_1\ E_2\ E_3\ E_4\ \ldots$ are phases in the development of the absolute, for every phase E_n there is an earlier E_m and a later E_o such that

$$E_m \text{ is the cause of } E_n \text{ is the cause of } E_o$$

But since each phase is totality it must comprise all phases. Hence

$$E_m \text{ is identical with } E_n \text{ is identical with } E_o$$

This union of identity and change will be recognized as similar to the Augustinian conception of the union of simultaneous, unique creation with successive, diverse preservation. It involves the same contradiction whose resolution from the monism of Hegel to the pluralism of Dewey has probably followed lines similar to that which was sketched above for medieval philosophy.

IV

Fatalist Implications of Monism. The thesis peculiar to fatalism is: there are events e_n which are necessary, and hence no other

[5] The difficulty is, however, not resolved in Spinoza's metaphysics in which substance *changes* its modes while it remains free of change or motion. The entire system thus rests on the contradictory concept of the modification of an unmodifiable substance.

[6] *Cf.* Hegel, *Encyclopædia of the Philosophical Sciences, The Doctrine of Essence,* § 149; "Necessity, then, is potentially the one essence, self-same but now full of content, in the reflected light of which its distinctions take the form of independent realities. This self-sameness is at the same time, as absolute form, the activity which reduces into dependency and mediates into immediacy."

event e_m is possible such that e_m implies not-e_n. In certain forms of fatalism, as in the Calvinist theory of predestination, all events are of the type e_n; while in others, as in Mohammedan religion, it appears that only certain events (e.g., birth, death, certain crises) which are crucial in human life are of that type. In either case fatalism asserts that these events are conditioned only by God, Allah, or some other form of the one substance.[7]

On the basis of the foregoing discussion of necessity it can be shown that this thesis is implied by all monistic metaphysics. (1) It follows from the monism of substance that every possibility is a necessity. (*a*) Suppose a thing is possible but not necessary and at some time it will exist. When it exists, its existence does not follow from the nature of the substance, for if it were so to follow the thing would be necessary. But in a monistic universe its existence could follow from nothing else. Hence the supposition is contradictory. Therefore, a possible thing is either necessary or it will never exist. (*b*) Suppose the thing is possible but not necessary and it will never exist. If it will never exist its non-existence does not follow from the nature of the one substance for if it were so to follow the thing would be impossible. But there is nothing else from which its non-existence could follow. Hence the second supposition is also contradictory. Therefore the only other alternative: the possible thing is a necessary thing. (2) It follows from the monism of substance that if a thing is necessary nothing possible is inconsistent with it. By (1) everything possible is necessary. Hence this thesis becomes: necessary things can not be inconsistent with each other. Since all necessary things are adjectival traits (modes)[8] of one individual they must be consistent with each other for the existence of an individual presupposes the coexistence of all its necessary traits.

These conclusions can not be evaded by the argument that absolute determinism permits the temporal development of the individual so that different phases may be in contradiction with each other while each phase is consistent, for, as we saw above, the use of the concept of change or time in this context is contradictory. Whatever else they may affirm, monistic philosophies are clearly seen to affirm, implicitly or explicitly, the thesis of fatalism.

[7] *Cf.* Augustine's arguments against Pelagius in *On the Grace of Christ and on Original Sin*, Works, tr. by M. Dods, vol. 12, chapters 45 and 52.

[8] It is customary to distinguish between modes and attributes on the basis of their relation to substance—a mode being a variable, unessential affection of substance (Descartes, Spinoza). But in monistic systems the fact that a substance has a specific mode at a specific time is as essential to it as the fact that it has a specific attribute at all times. For, since there is only one substance that substance alone is the cause of its having that mode at that time.

But if these conclusions are sound, no monistic metaphysics can serve as an adequate foundation for a philosophy of history. For on the basis of the fatalism implicit in monism, all true judgments of history are judgments of necessity, that is, they exhibit the event as necessary. Such judgments of necessity, however, assert nothing more than the tautology to which they are reducible: *A* is *A*. For we know nothing in the nature of the supposed unique cause of all things from which the specific character of a future event can be inferred. Whether that unique cause is the undifferentiated, metaphysically simple God of Augustine or the organic totality, the Absolute, of Hegel, all we can infer from them regarding the future is that whatever will be, must be. But at any time the event *e* or not-*e* is necessary. Which *is* necessary (i.e., which is, without contingency, implicit in the unique cause) can be determined only after the occurrence of *e* or not-*e*. "What must be" is therefore identical with "what will be" and the supposedly predictive statement is thereby reduced to the tautology "what will be, will be."[9]

In the absence of any methodology for specific predictions, the cognitive content of fatalism is identical with that of thoroughgoing indeterminism. And it is interesting to note that the identity obtains also with regard to certain psychological attitudes which fatalism and chance inspire. In either case the sequence of events is unpredictable. In either case, man is the helpless toy of circumstance, and wisdom can consist only of the fortitude with which the outcome is borne.

V

Historical Materialism as Epiphenomenal Fatalism. Certain interpretations of historical materialism divide social phenomena into two sharply differentiated groups: (1) the economic "basis," and (2) the ideological "superstructure." Only the former—that is, the social relations of production and exchange—can occur as causes in the system of social causation. They are considered as the sole principle of explanation in history. The second group, comprising such manifestations of social life as art, literature, and religion are simply effects of the first group. They act as historic forces only to the extent that they are completely determined by the development of economic conditions.

Analogous to this view is the theory of epiphenomenalism, ac-

[9] A modal assertion purporting to ascribe necessity or inevitability to an event is not really an assertion about the event, but about the sentence describing the event. The entire meaning of such modal assertion is that the sentence describing the event is an analytic sentence. See Rudolf Carnap, *Logische Syntax der Sprache.*

cording to which the body can influence the mind, but the mind can have no effect on the body. The states of consciousness can not be the cause of bodily action for consciousness is an epiphenomenon, an ineffectual reflection of physical events.

There are strong arguments in defense of epiphenomenalism, but even were it indisputably true, it could lend no support to that theory of historical materialism described above. Epiphenomenalism is in fact irrelevant to this theory of history.[10] The former is concerned with the relation between the covert phenomena of consciousness (perceivable only by introspection) and the overt behavior of the body. Historical materialism, however, deals with the relation between two groups of overt phenomena, for it is obvious that the art, literature, and religion which appear in history are as overt and observable as the economic phenomena which are considered as the sole determinants of historical change. The so-called "ideological superstructure" is not a state of mind but the gamut of books, journals, paintings, sculptures, music, architecture, and the various customs and institutions which cultivate them. All these are observable phenomena; as material as the means and processes of production of economic goods.

This variety of historical materialism therefore is not an attempt to discover the material causes of social phenomena, as distinguished from an epiphenomenal social consciousness. It is an attempt to regard a large group of cultural material phenomena as ineffectual, and as incapable of exerting any influence on the social organization. It claims that the writing and reading of books, the painting and seeing of pictures, are without any effect on social developments; whereas economic events, such as the writing and reading of a contract for the sale of goods, do have effects on such developments. Whatever distinction there may be between these two groups of events—and there are some very important distinctions—it is not that between mind and body or between the ideal and the material. A poem is no less material nor any more ideological

[10] Failure to realize this accounts for the confusion evident in Plekhanov's treatment of this theme in his *Fundamentals of Marxism.* See especially p. 21 *et seq.* International Publishers, New York, 1929. In discussing the rôle of personality in history in the same work (p. 68 *et seq.*) Plekhanov explicitly identifies his philosophy of history as a form of monistic materialism (p. 73). The extremes of fatalism to which this doctrine is carried is illustrated by the now well-known remark of Engels quoted by Plekhanov (p. 69): "It was a chance matter that the military dictator needed by the French Republic, when exhausted by years of warfare, should have been Napoleon, the Corsican. But that, in default of Napoleon, some other dictator would have taken his place, is proved by the fact that the necessary individual, Julius Cæsar, Augustus, Cromwell, or another, has always been forthcoming when needed."

than a contract, or a document conveying title to ownership, or a blueprint of an instrument of production.[11]

VI

Historical Materialism as Functional Determinism. Any attempt to center all events around a single, generative principle is essentially a form of fatalism and leads to such contradictions as were disclosed above. The universe is not a single determinate system; it is simply the locus of all possible systems. No single development in history, no system of physical laws, can give an exhaustive account of reality. For all systems involve a hierarchy of terms. Certain elements in the system, appearing as the more pervasive principles of explanation, are regarded as fundamental. Other elements are considered reducible to these fundamental terms. To ascribe to the world such hierarchy of traits is to endow the universe with our special human interest. For what is regarded as fundamental in science depends on the problems to whose solution that science is devoted.

For example, I examine an object lying on my desk, and I find (1) that it is a mass of two thousand grams, (2) that it is composed of American egg-shell paper, Dill's binders board and Holliston's cloth, and (3) that it is a collection of Greek tragedies. Which of these three characterizations is more fundamental? In a sense they are independent of each other. They refer to different specific problems. With reference to each particular problem there is a particular trait of the object more fundamental than the others. If I am interested in the transportation of the book the mass is of fundamental importance. If I am concerned with the durability and elegance of the book the quality of the materials is of prime importance, while its mass and literary content become irrelevant. If, finally, it is the content that interests me, the mass and quality of the materials is of no bearing at all.

On a more extended scale science must similarly discriminate

[11] An illuminating analysis of the concept of causality in the materialistic interpretation of history is given by Philip Frank in his *Das Kausalgesetz und seine Grenzen*, Wien, 1932. See especially Chapter VIII: *Kausalität, Zufall oder Plan in der Weltentwicklung*, where, for example, the problem of the rôle of great men, or ideologies in history, is shown to have scientific meaning only when formulated as a question concerning the range of values of variable symbols in certain types of statistical laws. The applicability of one set of laws with one range of values (say, economic factors) does not preclude the equally valid application of another set of laws with another range of values (say, personality). The choice between these types of laws will be decided on the basis of the kind of historical questions we are interested in. The choice, therefore, is a matter of "convention."

between traits of any concrete situation. Traits which are pertinent to the problems under consideration must be separated in discourse from those which are irrelevant. Were all the infinite qualitative aspects of experience relevant to the problems of science, science would be impossible. Science is possible only in a world in which independent determinate systems obtain. In discovering natural connections science must also disclose natural irrelevancies.

Every happening occurs in a large number of determinate systems at once. A historical event, for instance, may be considered as a member of a number of causal sequences: economic, political, psychological, biological, etc. Which of these numerous causal explanations is used by a historian depends on the kind of problem the historian happens to be interested in. Obviously no history can comprise the complex phenomena of social change in all their infinite details. Every historian is confronted with two major methodological problems in writing a history. He must (1) select certain facts from the historical data which are disclosed in his records, and (2) elaborate a theory which will explain how these facts are related. These two processes are interdependent. His theory will depend on the facts and his selection will depend on his theory.

In each of these systems of causation which the historian uses as his principle of explanation, the historical event is an abstraction from the concrete situation to which it refers. Historical necessity can then mean only the formal, logical necessity within the particular causal sequence. Necessity, in fact, is a category of logic, not of the natural or social sciences.

We have seen that in monistic philosophies (*a*) the concept of necessity is confined to the relation between a totality and a differentiated part; (*b*) all events are necessary; (*c*) the necessity of events precludes their temporal succession; and (*d*) judgments of necessity can be shown to be tautologies.

The terms "necessary" and "necessity" find, however, another application in science, and it is an unwarranted extension of this usage that lends a superficial plausibility to the monistic doctrines of necessity. With reference to any synthetic statement of science of the form (1) "If A, then B" we correctly say that B is a necessary consequence of A. In distinction from the monistic concept, this scientific concept of necessity does not preclude the possibility of some finite event C, such that C is not identical either with not-A or with not-B, and (2) "If A and C, then not-B"; in other words, while B may be necessary with respect to A, it may also be impossible with respect to the coexistence of A and C. It can be shown that if there are events which are values of A and B in

sentences (1) and (2), then there must be events which are values of C.[12]

It appears then that every law not only asserts the existence of a specific relation between certain events, but it also implies the existence of certain events between which the relation does not hold. It is impossible to find any determinate system such that all possible events fall within it. From the standpoint of any given system, any event whose cause is outside the system and yet whose effect has some influence on that system, is a chance event. For example, from the standpoint of the social economy of a given area, the changing course of a river which overfloods the region and compels the population to migrate, may be a chance event. Any world in which laws operate is therefore also a world in which accidents occur.[13] Accidents, however, are not to be identified with uncaused events.

In any one determinate system such as mechanics or economics, the proposition "the event B will occur" may be the inevitable logical consequence of the proposition "the event A will occur." But in the physical world nothing is inevitable, for some event C which is not a member of that particular system may occur and thereby prevent the occurrence of B. A gust of wind may swerve a bullet wide of its mark, though by the laws of ballistics it should have "inevitably" struck the target. A revolution might be "inevitable" at a certain time according to some theory of history, but the sudden advent of an epidemic disease or geological cataclysm might prevent it.

To avoid these conclusions by the theory that while historic events are inevitable, their occurrence at any specific time is indeterminate, is to deny all causal sequence and to revert to that absolute fatalism which has already been disposed of above.

Economic determinism is one of a number of determinate systems in which historic events can be organized. It is especially

[12] We can now render explicit the difference between monistic (absolute) determinism and pluralistic (functional) determinism.

The thesis of monistic determinism: (If A, then B) implies that [there is no C such that (C is not identical with not-A) and (C is not identical with not-B) and (If [A and C], then not-B)].

The thesis of pluralistic determinism: (If A, then B) implies that [there is a C such that (C is not identical with not-A) and (C is not identical with not-B) and (If [A and C], then not-B)].

[13] Neglect of this methodological implication of scientific laws is not uncommon in the literature of Marxism. *Cf.* Edward Bernstein's *Evolutionary Socialism*, New York, 1911, p. 7: "The application of materialism to the interpretation of history means then, first of all, belief in the inevitableness of all historical events and developments. The question is only in what manner the inevitable is accomplished in human history, . . . "

suited to the explanation of the formation of economic classes in society and of the relations between them. It is the best available theory which can be used in efforts to eliminate that type of social organization in which antagonistic economic classes are possible.

Like all other determinate systems it presupposes that its elements occur in isolation. That is to say, it asserts a functional relation between certain traits of events provided that nothing extraneous to the system intervenes to alter the relation. But this provision finds no absolute guarantee in experience. That is why the application of any scientific theory requires control over its material conditions. It is not true that a projectile follows the path of a parabola necessarily. It is true that it follows such a path when we control its environment so that nothing affects its movement but its weight and the impulse that projected it.

Similarly, it is not necessarily true that social phenomena in the future will occur as predicted on the basis of the theory of economic determinism in history. It is very likely to be true, however, if the proper control is brought to bear on the environment in which these phenomena occur. It remains to inquire what the nature of this proper control is and whether it differs in any formal or material way from the kind of control which operates in the physical sciences.

WILLIAM GRUEN.

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THE CONTINUITY OF CHANGE. I

THERE is a presupposition often encountered in modern cosmology that change, activity, process is the fundamental character of nature, and yet aside from Whitehead's work there has been no attempt to deduce the consequences of this assumption. It must be observed that the temper of Whitehead's earlier books—*The Principles of Natural Knowledge, The Concept of Nature,* and *The Principle of Relativity*—is predominantly positivistic. In the Preface to the first of the books mentioned is the statement: "Accordingly none of our perplexities as to Nature will be solved by having recourse to the consideration that there is a mind knowing it."[1] And in the first chapter of the *Principle of Relativity* Whitehead has quoted this statement of Poynting: "I have no doubt whatever that our ultimate aim must be to describe the sensible in terms of the sensible." He then remarks: "Adherence to this aphorism . . . is the keynote of everything in the following chapters."[2] The intention

[1] P. vii, 2d edition, Cambridge, England, 1925.

[2] P. 5, Cambridge, England, 1922.

of these early books was positivistic and the achievement is likewise positivistic. Events, the relata for the fundamental relations of "extension," "cogredience," and "ingression" (of objects), are defined as the situations of perceived objects or, in the case of scientific objects, as the situations of hypothetically perceivable objects.[3] "The apparent world discloses itself to us as the ingression of sense-objects amid events. . . . But a bare event is a mere abstraction. Events are disclosed as involved in this relationship of ingression."[4] It follows immediately from these statements that "events," which are the concrete elements of the scheme, are never immediately presented in perception. They are "disclosed," but that can mean here merely "inferred," since "objects" alone are immediately observed.

In the newer Whitehead, best represented by *Process and Reality*, the intention has been to develop a "descriptive metaphysics"—a speculative scheme in which the most general characters of our experience will be organized for the analysis and understanding of specific facts. The result has been the construction of an elaborate, abstract rationalistic metaphysics, as yet mostly uninterpreted and probably incapable of a consistent and unambiguous interpretation, and not wholly free from formal inconsistencies within itself.

This is not a suitable occasion for the defense of these objections. I propose merely to indicate the most general grounds of my reservations with respect to Whitehead's scheme. It is my conviction that most of the difficulties of the scheme represented by *Process and Reality* stem from the assumption of "atomic occasions" and the correlative relation of "prehension"—the "concrete fact of relatedness" between such occasions. In the first place, what in erpretation is there of these fundamental categories—atomic occasions and prehensions? Whitehead's own interpretation of "atomic occasions" is in terms (1) of modern quantum phenomena in physics[5] and (2) of James's "drops of perception."[6] Now it is an outcome of the physics of the last decade that, however indisputable the evidence for the occurrence of quantum phenomena in nature, there is no evidence that such atomism is irreducible and absolute. Indeed it is more correct to say, as Whitehead himself observed in *The Principle of Relativity*, that "atomicity is a property which is capable of more or less complete realisation."[7] Likewise it would be

[3] Cf. *The Principles of Natural Knowledge*, paragraph 25.1.
[4] *The Principle of Relativity*, p. 37.
[5] *Process and Reality*, New York, 1929, p. 365.
[6] *Ibid.*, p. 105.
[7] P. 72.

difficult, if not impossible, to find an interpretation in recent atomic physics for the *prehension* by an *atomic* occasion of other *atomic* occasions. Relativity theory by the use of a point-instant continuum has attempted to make this relationship plausible, but in turn it is a conceptual scheme without interpretation for its elementary "point-instants." James's analysis of experience into "drops of perception" is unquestionably accurate as far as high-grade conscious experience is concerned, but Whitehead's philosophy is grounded, not on such experience, but on *feeling*, which is essentially more fundamental than superficial, conscious experience. The difficulty of this position is that "simple physical feelings"[8] can never be identified or illustrated in conscious experience, and it is difficult therefore to understand how they can be identified at all.

It has been necessary to present briefly these objections to Whitehead's two schemes in order to defend my introduction in this essay of an alternative scheme based on the category of change or process. The task of this paper is to outline the general character of a cosmology, which attempts to avoid the positivism of Whitehead's earlier scheme by including a treatment of perception and likewise hopes to escape the unfruitful complexities of the later scheme by a return to the simpler notions of "non-atomic events" and the relation of "extending over."

It is obvious that "change," "activity," "process" are to be taken as undefined terms, and I shall use them synonymously. Particular elements of change I shall call "modes" of change. (I am here following a suggestion made by Whitehead in *Process and Reality*, p. 10:—"Spinoza's 'modes' now become the sheer actualities.") These modes will also be referred to as "modal-events." Since we have renounced the positivistic definition of events as given in Whitehead's earlier scheme, we must renounce likewise the relation of "ingression" which unites the event and the "object" which characterizes it. Objects are those entities in nature which "do not pass."[9] They become the "eternal objects" of *Process and Reality*. But the capacity of entities which do not pass to act as the "characters" of elements whose essential nature is passage is certainly in doubt, and this relation of "ingression" is clearly restricted to the special case of the mere temporal endurance of an object given in perception where such endurance defines the event which is the "situation" of that object. There is a distinction here, which is precisely that which Whitehead makes in his lectures at Harvard

[8] Cf. *Process and Reality*, p. 375.

[9] *Concept of Nature*, Cambridge, England, 1920, p. 143.

between the "flux of forms" and "forms of the flux."[10] When we have a flux of forms we have the successive appearance of a set of Platonic Ideas or "static patterns" which attempt ineffectually to characterize the flux in which they appear. When we have a "form of the flux" we have an "active pattern" which is the differentiating pattern of that activity. The two phrases "static pattern" and "active pattern" are my own and serve to indicate specifically the above distinction. The active pattern I shall also call the "modal-pattern" to indicate that it is a genuine characteristic of a modal-event.

Since we have accepted change or process as our fundamental category and modes of change as the concrete elements of our world, all our *experiences* must be regarded now as concrete modal-events; and certainly nothing is more incontrovertible than this description of an experience, whether sense-experience, thought, imagination, or memory, that it is a "mode of activity or change." This activity is characterized by a modal-pattern which differentiates that mode from all others. The most general description of an experience is that it is the experience *of* something. This seems to me to have been conclusively established by Hume and his immediate predecessors. The alternative reading that experience always means experience *with* something must be renounced as far less obvious and immediate. Experience then in its most general characterization is the presentation of a somewhat, of a "content" or "terminus." I shall be satisfied with the phrase "presentation of a what" (without attempting to distinguish a "what" from a "that"). The "what" I shall also call the "phenomenal pattern."

It follows from the above statements that an experience as a concrete event can not be characterized merely by the phenomenal pattern presented in that experience. If there is a *what* presented, there is a *how* of presentation which doesn't appear as terminus or content and yet as "this manner of presentation" is a necessary ingredient of the active pattern characterizing the experience. It is clear that a static pattern such as the cliffs of Dover is one variety of phenomenal pattern which must be distinguished from a flickering candle flame or an exploding rocket. The flame and the rocket are certainly not static "objects." It is necessary to observe, therefore, that while all modal-patterns are active, phenomenal patterns are both static and active. Furthermore it is impossible to set up phenomenal patterns as independent concrete elements since, apart from

[10] Cf. also *Nature and Life*, Chicago, 1934, p. 15: "In the place of the Aristotelian notion of the procession of forms, it [the new physics] has substituted the notion of the forms of process."

their contribution to the active pattern of a concrete event, they are mere abstractions.

The present scheme must follow the lead of relativity theory in its account of the nature of "things" and "permanences," but it must not follow blindly and uncritically. The general theory of relativity is grounded on a point-continuum in which the points are events. A particle throughout a given duration is simply a volume or "tube" of this space-time continuum that is characterized by a specific energy-tensor.[11] This means that the particle *is* nothing other than that tube of space-time, and the energy-tensor which applies to that tube expresses the curvature or non-uniformity of that portion of the spatio-temporal continuum.

It has been Whitehead's service to the philosophy of relativity that he has demonstrated the possibility of deriving predictions comparable to Einstein's from a mathematical scheme which renounces Riemannian geometry and the non-uniformities of curvature which Einstein introduced for the description of gravitational and electro-magnetic fields. Whitehead raises his objections principally on the score of the impossibility of discovery or measurement of such non-uniformities of spatio-temporal structure, and it is noteworthy that Einsteinian relativity itself, when it attempts an application to a concrete phenomenon, such as the bending of light rays in a gravitational field, replaces its Riemannian geometry by a Euclidean in virtue of the so-called "Principle of Equivalence."[12] It is difficult, therefore, to avoid the inference that Riemannian geometry serves merely as a useful bit of mathematical apparatus for the general theory of relativity but has no physical, that is, identifiable or interpretable, significance.

Whitehead's account of the nature of the particle is superior to that of Einsteinian relativity by reason of (1) his assumption of a Euclidean rather than Riemannian continuum, (2) his acceptance of events as his fundamental elements rather than the physically meaningless "point-instants" of the Einsteinian continuum. He derives point-instants, "event-particles" in his terminology, from events by the well-known method of extensive abstraction. A particle then within a given time is a particular characterization of the set of events which constitute the situation or "route" of that particle during that time: "An 'adjectival particle' [an elementary physical particle] is the adjective attached to the separate event-particles of a historical route by virtue of the fact that some one and the same adjective attaches to *every* stretch of the route. . . .

[11] Cf. A. S. Eddington, *The Mathematical Theory of Relativity*, Cambridge, England, 1930, 2nd edition, paragraph 56.

[12] *Ibid.*, paragraphs 17, 41.

We must not think of an adjectival particle as moving through its route. We will say that it 'pervades' its route. . . ."[13] Thus Whitehead has assumed a uniform extensive structure among all events in place of the spatio-temporal non-uniformities of the Einsteinian scheme and has interpreted non-uniformities in terms of the diverse characters of events. Similarity of character along a route defines a particle or object.

It is a variant of Whitehead's account which I wish to use in my own treatment of the "staticities" of nature. I shall assume that every modal-event is unique, and that every modal-event may be considered as composed of an indefinite number of constituent modal-events, each unique in its turn. The condition for the appearance of a "staticity" in nature is this: that an event occurs such that within parallel, constituent, temporally-ordered slices of that event the modal-patterns are approximately identical. It is necessary merely that this approximation to identity be sufficient to act as a necessary condition in the eliciting of a presentation of a static phenomenal pattern, that is, an "object." Thus when I perceive a static phenomenal pattern which I call a "book" my visual apparatus clearly doesn't concern itself with the molecular or submolecular activities within the periphery of the book nor the changing gravitational or electro-magnetic fields which play upon it nor its absorption and emission of radiant energy. There is presumably a structure of activity there such that the conjunction of this activity and certain perceptual activities acts as a sufficient condition for the concrete percipient event—presentation of the object "book." In this scheme therefore there are no genuine permanences in nature, no final immutable atoms to carry the identity and reality of the world and no unvarying structures or patterns of activity to take their place.

There is, however, an inveterate "atomic prejudice" which leads the experimental physicist to think of the ultimate physical elements—positrons, neutrons, electrons, protons—as if they were immutable Democritean atoms which suffered no alterations in their many adventures. This native bent of the mind toward materialism has been variously explained. Whitehead has attributed it to our reliance on visual perception which delivers to us at any moment mere colored regions. That genuine change or process is impossible in an atomic materialism is due to the fact that "there is nothing intrinsic to the mere colored regions which provides any hint of internal activity whereby change can be understood."[14] In the terminology of the present scheme, the physicists—headed by

[13] *Principle of Relativity*, p. 74.

[14] *Nature and Life*, p. 34.

Leucippus, Democritus, and Epicurus—have set up miniature static phenomenal patterns, analogous to those presented in sense perception, as the concrete elements in nature. Meyerson has observed that this is an inherent tendency of the mind, that it makes all causal explanations refer back ultimately to the action of enduring material corpuscles. This means that causality is natively intelligible to the mind only as an adjunct to *endurance*. The continuity of *causality*, then, is the continuity of a *continuing* particle—the continuity of its bare existence.[15]

In a scheme founded on the category of process or change mere *endurance* of any element is a meaningless concept. "Endurance" involves, as a correlative concept, the notion of an absolute staticity which is the same at the beginning and at the end of the period of endurance. In a scheme founded on process there are no such staticities, since events are by definition non-static and particles are simply configurations of events obeying certain conditions with respect to similarity of structure. It is necessary, therefore, in our present scheme to avoid any appeal to a principle of endurance of entities from the past into the present and future in an attempt to clarify the nature of the causality holding between the concrete modal-events of our scheme. We can not follow Whitehead's account of causality, therefore, in terms of the direct objectification of one actual occasion in another, since the intelligibility of this account seems to rest on an illicit appeal to the proscribed principle of endurance. Whitehead does not assert that occasions "endure": "Causation is the transfer of a feeling, and not of a total satisfaction."[16] But there *is* transference, re-enaction, reproduction, conformation of *feelings*. In view of Category of Explanation (xii) which asserts feelings to be a species of prehension and Category of Explanation (xi) which analyzes a prehension into the three factors—subject prehending, datum prehended, and the subjective form of the prehension,—it is impossible for me to understand how feelings can be transferred or re-enacted, since the subject of the prehension—an actual occasion—is unique and immovable.[17] Whitehead gives an explanation of this transference, however, in terms of the eternal objects involved which makes no appeal to a principle of endurance: "When there is re-enaction there is one eternal object with two-way functioning, namely, as partial determinant of the objective datum [the cause], and as partial determinant of the subjective form [of the effect]."[18] If

[15] Cf. Emile Meyerson, *Identité et Réalité*, Paris, 1908, Chapters I and II.
[16] *Process and Reality*, p. 364.
[17] *Ibid.*, p. 113.
[18] *Ibid.*, p. 364.

eternal objects *alone* (in our scheme "modal-patterns") are transferred and re-enacted, we have satisfied the demand for repetition or conformity in causal explanation without the assumption of the undifferentiated endurance of the concrete elements of our scheme, which is equivalent to the assumption of a material atomism. We can not allow ourselves to speak, as Whitehead does, of the objectification of actual occasions, nor use this assumption in attacking the fallacy of simple location.[19] We must acknowledge that only the forms of definiteness of the events, their "modal-patterns," are re-enacted and transferred. The events themselves, as Whitehead himself observes, are "immovable."

Causal continuity in the present scheme is mediated by two factors—the continuity of extension of one event over another and the reiteration of modal-pattern. It is by virtue of extension that two contiguous events can be regarded merely as constituents of the single event which extends over them both. This is simply a concise way of saying that there are no genuine discontinuities in nature and that every event is embedded in an event which extends over it, and likewise constituent events are embedded in it. With respect to the modal-patterns exemplified in events it means that no modal-pattern is ever discrete or final or complete, but is merely a phase in a larger modal-pattern. It is an outcome of this position that all nature is but one uncompleted event, but since there is the possibility of almost "infinite" diversification within this event, such a statement should not unduly offend a pluralist.

There is not only this general relation of extension holding between events, but there is also a "causal structure" ordering them. This means that with respect to any event A there is a set of events which constitutes the "causal past" of A, and (if we assume a system of reference which admits of events future to A) there is a set of events which lies in the causal future of A. These events include as boundary members all events which might contribute to gravitational or electromagnetic disturbances within A or be affected by such disturbances. Thus the causal or "absolute" past of an event is the set of events which might possibly contribute to it and the causal or "absolute" future the set of events to which it might possibly contribute. This does not imply the existence of an absolute Newtonian past or future since an infinite number of spatio-temporal frames of reference can be used for the analysis of the relation of the event in question to its predecessors, contemporaries, and successors. It is by virtue of this fact that a genuine relativity of motion and rest is secured. This is most clearly seen by reference

[19] Cf. *Process and Reality*, p. 208.

to the "causal-cone" of Minkowski [20] in which it is obvious that the temporal axis of the spatio-temporal scheme chosen for reference need not coincide with the axis of the cone, but may swing through an angle bounded by the surfaces of the cone. We have then the assurance of an "absolute" past and "absolute" future for each event and also the possibility of alternative analyses of this past and future.

It is clear from our discussion that the factor of continuity is not in itself sufficient as an account of the nature of causality since the events contemporary with a given event are continuous with it as well as those in its past and future. There is a "space-like," as well as a "time-like," continuity. It is necessary, therefore, to refer to the other factor in causality—reiteration of modal-pattern. We shall make the following distinction: Two events, *A* and *B*, such that *B* is characterized by a modal-pattern involving the modal-pattern of *A* as a constituent, will be called causally connected if the modal-pattern of every event of the route connecting *A* and *B* involves the modal-pattern of *A* as a constituent. If these are two events, *B* and *C*, which involve the same modal-pattern, say that of *A*, as a constituent of their own modal-patterns and if there is at least one event of the route connecting *B* and *C* which does not involve the modal-pattern of *A* as a constituent of its own modal-pattern, *B* and *C* will be called contemporary. This is only one instance, of course, of the more general relationship of simultaneity. Any event *A* is simultaneous with *B* if it lies neither in the absolute past or absolute future of *B*. If the modal-pattern of *A* is a constituent in the modal-pattern of *B*, then *A* will be termed a "causal event with respect to *B*" and *B* an "effected event with respect to *A*."

Before proceeding further it is necessary to examine the meaning of the assumption that one modal-pattern can be a "constituent" in another. We must distinguish first of all between the analysis of an event into its extensive components and the analysis of a modal-pattern into its qualitative constituents. The present scheme must assume that the modal-patterns of events are associated with no absolute extensive size of the elements they characterize. We can not speak, therefore, of the constituents of a modal-pattern as if they were extensive units which could be added together to make "wholes" or divided up into their ultimate parts. This quantitative logic will not serve us here. To follow it would lead us back to

[20] Cf. *The Principle of Relativity;* H. A. Lorentz, A. Einstein, H. Minkowski, H. Weyl, tr. by W. Perrett and G. B. Jeffery, London, 1923, p. 84, or Whitehead, *The Principle of Relativity*, p. 31.

the atomism we have renounced. We must introduce the notion of the merging of qualitative types of activity to form a new qualitative pattern with the insistence that such merging is not arithmetical addition of elements. There must be a provision for the opposition of qualities too and the possibility that one type of activity may wholly or partially annul another.

It will be convenient in the following paragraphs to use a "mathematical model" as an analogy, and *merely* an analogy, of the set of conditions we have just enumerated. The model to be used is the mathematical method known as Fourier analysis by which any arbitrary function can be analyzed into a set of component periodic functions. Since this set is expressed as a sum, which exactly represents the given function if the number of terms is indefinitely increased, certain terms of the set may wholly or partially cancel each other, and this characteristic is expressed graphically when the component trigonometric functions are superimposed on each other as sine waves of varying amplitude and frequency. The advantage of our analogy is this: we can conceive of the modal-pattern of an event as the "superimposed" reiteration of the modal-patterns of events within its absolute past, and we can illustrate the continuity and reiteration of modal-patterns by the continuity and periodicity of the trigonometric functions of our mathematical model. That our doctrine of superposition in the form of "superposition of wave-states" appears as an integral and fundamental part of recent wave-mechanics is of assurance to us merely by guaranteeing that our scheme is not inconsistent with modern methods of analysis of physical phenomena.[21]

On the assumption that causal re-enaction of pattern is a periodic function of a variable temporal coördinate, the analysis of the modal-pattern of a given event into its causal constituents is its analysis into modal-patterns which are periodically reiterated throughout the routes joining the given event and those events that are causal with respect to it. It is by virtue of the characteristic of superposition that a selection is made from the modal-patterns of the events in the immediate absolute past of any event when that event is "effected." There is "cancellation" of one component modal-pattern by another (Whitehead's notion of incompatibility), and this cancellation allows only specific modal-patterns to be reiterated in the effected event. These modal-patterns, thus reiterated, form a new "periodic function" which is reiterated in the events which it effects and annuled in those which it does not. It must be noted that while this scheme approaches at this point close to Whitehead's doctrine of

[21] Cf. P. M. A. Dirac, *Quantum Mechanics*, 1st edition, Chapter I.

"integration" or "concrescence" involving "negative prehensions" and "incompatibility," the individuality of the causal components has been preserved in the present scheme, since it is immaterial whether one regard the modal-pattern of an event as a "simple periodic function" or as a sum or superposition of other "periodic functions." It is this provision which preserves the unity and continuity of the present scheme, and enables it to avoid the notion of a genuine concrescence or satisfaction which leads immediately to an atomism inconsistent with its fundamental assumptions.

We can now sum up briefly the general conditions for the existence of a relation of causality between two specified events, *A* and *B*: (1) The active pattern of each event must be merely a phase in the active pattern of event *C* which extends over them both; (2) the active pattern of the causal event must be reiterated in every event of the route connecting *A* and *B*. Since there is never mere reiteration in another event, the active pattern of the causal event is merely a constituent in the active pattern of each of the events on the route connecting *A* and *B*. The reiteration can be analyzed in terms of the frequency of the periodic function representing the modal-pattern of the causal event or in terms of the frequencies of the component periodic functions representing the constituents of *its* modal-pattern. We may discard our mathematical model of Fourier analysis once we have recognized that the concept of "periodicity" is clearly consistent with the notions of continuity of modal-patterns and their reiteration in future events and indeed is a convenient abbreviation of these notions.

It is instructive now to reinterpret the previous account of the nature of "staticities" in our world of flux by observing that the presence of a staticity is merely the occurrence of a set of events constituting a route between two events *A* and *B* such that the modal-pattern of one of the two "end" events, say *A*, is the predominant constituent in the modal-pattern of the other and in the modal-pattern of *all* the events of the route. Perfect staticity would be a case of "exclusive" causality in which the modal-pattern of *A* was the *sole* constituent of every event of the route and of the end event *B*. This would assume the exact cancellation of all the other constituents of the modal-pattern of every event of the route, and in the present scheme this ideal of exact cancellation is not assumed. We may say that those staticities which act as necessary conditions in the eliciting of "presentations of static phenomenal patterns" do exhibit an approximation to the ideal of exclusive causality, and conversely "perfect" causality is most fully exhibited in the set of events which constitutes an approach to a "per-

fect'' staticity. This statement is a reinterpretation and reaffirmation of Meyerson's discovery of the linkage of ''causality'' and ''identity.'' [22]

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[22] To be continued in next issue, No. 24.

BOOK REVIEWS

Vernunft und Existenz. KARL JASPERS. (Aula-Voordrachten der Rijksuniversiteit te Groningen I.) Groningen, Batavia: J. B. Wolters. 1935. 115 pp. 2.25 gld.

Jaspers is not one of the German philosophers best known in this country. Everyone, however, for whom what is basic to philosophy is not exhausted by philosophy of science, logic, and social philosophy, will place him among the leading philosophers—in spite of the fact that his ideas are not always convincing, his solutions are sometimes tentative, his way of expressing himself is esoteric. For he sees problems where others are content with ready-made answers and his attitude to these problems is new and surprising. His new book on ''Reason and Existence,'' which deals in a new way with the old antinomy of rationalism and irrationalism, is only a minor work of Jaspers', a supplement, as it were, to his major work in three volumes, ''Philosophy.'' It is therefore a book difficult for anyone to understand who is not acquainted with his terminology and the outlines of his system.

It is the reprinting of a series of five lectures given at the University of Groningen in Holland. The first and last of these lectures maintain that Kierkegaard and Nietzsche are the decisive philosophers of the last century and suggest what their philosophy has meant in the development of thought and what it can mean in the future. Both philosophers represent a new basic attitude to the world, an attitude that they reached independently of each other. For both of them thinking is not only a formal logical movement, but also an ''interpretation'' which both of them use as an ''infinite reflection'' directed towards themselves as a means of self-understanding, in order to touch their own ''existence.'' But neither of them drew from this the ultimate philosophical consequences. One of them, Kierkegaard, jumps to an extreme orthodoxy (he himself uses the expression ''jump''); the other, Nietzsche, ends in an atheistic naturalism. This ''loneliness,'' deriving not from an act of will but from their ''existence,'' is their strength as well as their limitation. They feel themselves exceptions and they

are exceptions. But philosophy must not take the point of view of the exception but that of the generality of men with a view to the exceptional case.

The three intermediary lectures are devoted to the central problem of the relation of reason and existence. All our thinking moves in boundless realms, thinking which is always visualizing the whole which can never be realized. Jaspers speaks of these realms as the "Embracing" (*das Umfassende*). They have two forms: the "embracing" that we are ourselves and the "embracing" that we know. The first of these has in turn three forms: the "embracing" that we are ourselves is (1) our empirical *Dasein*, (2) consciousness as such (*Bewusstsein überhaupt*), (3) the spirit, which is taken by Jaspers to mean the movement that connects our consciousness of ideas (in the Kantian sense of the word) with consciousness as such. But all three of these are merely a foreground: their "*Beseelung*" arises from the "existence" that *is* not in the usual sense of the word because it can never become object, but out of which "existence" we live. Reason, on the other hand, taken in a very broad sense as a light that elucidates everything, even the unreasonable and the anti-reasonable, never works independently but only in connection with the "existence," coming out of it and yet related to its counterpart, the transcendent. But because "existence" is never realized in the individual as such alone, but always in communication among individuals, reason must also be understood in this relational way. Truth thus obtains a specific meaning; it is not the absolute truth of logic, but is "existential communicability." From this the idea of a philosophical logic follows, far from formal logic, closer to Kant's transcendental logic, from which it is, however, distinguished by the fact that the concept of "existence" and not that of a formal transcendental subject is its starting-point. However only the first indication of what might be meant by such a philosophic logic is given in this book, which may nevertheless indicate in Jaspers' development a transition from interest in existential problems as such to an interest in a philosophic logic based on existential philosophy.

M. A. G.

Death and Elizabethan Tragedy. THEODORE SPENCER. Cambridge: Harvard University Press. 1936. xii + 288 pp. $2.50.

To the ever relevant subject of the relation between philosophy and literature Dr. Spencer's study, a model of thorough, yet eminently readable scholarship, makes a notable contribution. The central theme of this book is that the great scenes on death which are the glory of Elizabethan drama have as their essential back-

ground the conflict between the medieval preoccupation with the other world and the growing Renaissance emphasis on this world. Thus a philosophic issue of supreme importance—that between the Christian and Humanist views of life—conditioned the whole of Elizabethan drama in a most significant way.

Dr. Spencer shows in brilliant detail how this issue affects the language, the ideas, and the technique of outstanding Elizabethan dramatists such as Shakespeare and Marlowe, Chapman, Fletcher, Ford, and others. The author's excellent chapter on "The Mediaeval Background" brings out most interestingly the influence which the development of literary and artistic convention, on their part, can exert on philosophy. Thus Dr. Spencer concludes that it was the development of realism and emotion in literature and art, especially in the portrayal of the Passion of Christ, which was "the fundamental cause for the concentration on death which is one of the most notable facts about the later Middle Ages."

Whether or not this and other points which the author makes can be accepted without qualification, this small volume should prove invaluable to serious students of either literature or philosophy.

CORLISS LAMONT.

NEW YORK CITY.

Religion and Learning. A Study in English Presbyterian Thought from 1662 to the Foundation of the Unitarian Movement. OLIVE M. GRIFFITHS. Cambridge: Cambridge University Press. 1935. viii + 202 pp. 12/6.

This volume should prove valuable to students of the history of philosophy who wish to appreciate the effects of theological controversies on the course of British philosophy. Miss Griffiths' chief theme is that the English Presbyterians, excluded from Oxford and Cambridge for their attacks on the Aristotelianism there enthroned, went to Holland and Scotland. There they soon went beyond their mild Cartesianism and Platonism, embracing the thought of Grotius, Hutcheson, Reid, and many lesser moralists, who were attempting to free moral science from theology. In theology the English Presbyterians were carried with astonishing rapidity into Arianism and Socianism, so that many of the Unitarian leaders came from their ranks. The intellectual divergence between the Scottish and English Presbyterians is suggested but not developed. In the last sections the author attempts to explain the course of English Presbyterian thought during the nineteenth century, indicating why it turned its back on both Scottish liberalism and German transcendentalism, in favor of the position taken by Martineau and other Unitarians.

H. W. S.

Metaphysik als Naturwissenschaft. Betrachtungen zu Ludwig von Bertalanffy's Theoretischer Biologie. CARL FRIES. (Philosophische Abhandlungen, Heft 8.) Berlin: Emil Ebering. 1936. 80 pp.

This running commentary on Bertalanffy's *Theoretische Biologie* (1932) endorses the organismic theory, the anti-mechanism, and idealistic metaphysics which Bertalanffy has inferred from the facts and history of biology, and the author even carries these doctrines a step further in the direction of mysticism in the exuberance of his approval. He argues that the impermeability of the membrane of the cell nucleus to certain ions and the process of mitosis are mysteries beyond the competence of science and presents other familiar data to show that metaphysics is necessary. Reichenbach, Heisenberg, and Planck are quoted with approval (an infrequent occurence in Germany today) as opposed to "mechanism," and the innocent circumstance that wholes are more than aggregates and that certain matters can not be explained by science at the present time is taken as proof of teleology and an ordering will in nature. Another contemporary touch is added when the author accuses "the skeptical century of the Enlightenment" of barring the way to idealistic explanations in science.

V. J. McG.

Versuch über das Wesen der Gesellschaft. WERNER ZIEGENFUSS. Leipzig: Hans Buske. 1935. vii + 126 pp. 4 M.

The current German revolt against positivism, individualism, historical materialism, and socialism is well illustrated by this compact, well-documented little book. Ideal factors or "spiritual decisions," the author says, determine the course of history and the nature of society can not be inferred from that of the individual since: "the full strength of the ideal dynamic lies in life bound together in groups," which, of course, may be broad like a racial group, or narrow and intimate like the circle formed by a political *Führer* and his collaborators. Although the individual shrinks in relation to the family, the community, and the state, and the "categories" and "basic concepts" (order, love, command, etc.) which determine him are said to be on the move and essentially changing, historical-mindedness is deplored, and private property is upheld as eternal. Private property, however, is taken euphemistically as anything which aids the individual's self-development and self-assertion and the desire to increase it unlimitedly is conceived as a universal propensity, without which society would hang in the air, an impossible Utopia. Thus socialism, which tries to assign all property to the

state or to the masses, to an abstract neutral possessor, is untenable, being disallowed, it would seem, by the eternal categories. Yet the author gives another reason why socialism must fail. "All property which is not affirmed and, so far as possible, increased by a particular will decays and will be supplanted and dispossessed by other wills," a statement in agreement with recently expressed territorial ambitions of National Socialism.

At times the author's views are a trifle unexpected, as when he stresses the necessary tension between the state, the party, and the general "interests" of society. At the end, also, he bids farewell to liberalism with a trace of wistfulness. The National Socialist exaltation of the state, however, was the only escape from "individualistic destruction." Although the book discusses the views of many important German sociologists, it is not very repaying to a philosopher unless he is interested in the bearing of his subject upon the political scene.

V. J. McG.

OTHER NEW BOOKS AND JOURNALS

Geiger, George Raymond: The Theory of the Land Question. New York: Macmillan Company. 1936. xi + 237 pp. $2.00.

Schondorff, Achim: Grundlegung einer volkswissenschaftlichen Lehre vom Menschen. Begründet auf Kriegsbriefen deutscher Studenten. (Studien und Bibliographien zur Gegenwartsphilosophie.) Leipzig: S. Hirzel. 1936. 68 pp. 3 M. (A contribution to typology based on a study of student-soldiers' letters. The letters have been examined for expressions of attitudes toward: (1) people and country; (2) God and death; (3) nature and art; (4) family and home; (5) comrades in arms.)

Revue Philosophique. 61e Année, Nos. 9 et 10. La prévision dans l'histoire humaine: *J. Delevsky.* La découverte de la vie par la raison: *A. et Y. Miroglio.* Variations sur la logique pure: *M. Marsal.* Les idées de Samuel Butler: *J. B. Fort.*

Revue de Philosophie. 36e Année, No. 5. Les premiers principes de la raison dans *L'être et les êtres,* de M. Blondel: *J. De Tonquedec.* De la connaissance expérimentale de l'âme par elle-même: *G. Desgrippes.* La définition du travail: *Y. Simon.* La conscience malheureuse ou le pendule rationaliste: *M. De Corte.*

Zeitschrift für Ästhetik und Allgemeine Kunstwissenschaft. XXX. Band. 4. Heft. Die Ästhetik in den nordischen Ländern: *Kaarle S. Laurila.* Spätromanik und Frühgotik: *Walter Del-Negro.*

THE NEW SCHOLASTICISM. Vol. X, No. 4. Hylemorphism and the Conversion of Mass into Energy: *J. M. Marling.* Vitalism, Abiogenesis and Theism: *D. C. O'Grady.* Substance and Accident in the Philosophy of Descartes: *H. R. Burke.*

CRITERION. Any XII, Num. 44. L'estetica presso i neoscolastici: *R. Bizzarri.* La filosofia de la història i la teorie del progrés: *Miquel Soy.* Jesús i el racionalisme: *J. Miquel i Macaya.*

NOTES AND NEWS

A program of a philosophical nature was held at Williams College on October 9th to 12th in connection with the celebration of the Centenary of the inauguration of Mark Hopkins as President of Williams. Mark Hopkins occupied the chair of Professor of Moral Philosophy at Williams for a period of fifty-seven years (1830–1887) and served as President for thirty-six of those years. Because the reconciliation of science and religion was very dear to Mark Hopkins' heart, the Centenary program included discussion of both scientific and philosophical topics. The more specifically philosophical lectures delivered during the Centenary were the following.

Philosophy and Religion One Hundred Years Ago: *William E. Hocking.*

The Bearing of Biology and Physics on Liberal Religion: *Wilmon H. Sheldon.*

The Bearing of the Sciences of Man on Liberal Religion: *William E. Hocking.*

Do Science and History Indicate Human Progress?: *Rufus M. Jones.*

Changes in Religious Belief Due to the Influence of Recent Science: *Sterling P. Lamprecht.*

Mark Hopkins as a Philosopher: *James B. Pratt.*